

## **Comparison of Nitrate kinetic removing rate for Soil-Water medium by two organic materials in three different Carbon to nitrogen ratios.**

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Groundwater pollution with excessive nitrate is an abnormal phenomenon on a local, regional, and even international scale. Most countries are facing this problem and are looking for a way to solve it to provide safe drinking water in accordance with the standards of the World Health Organization. The allowable standard concentration of nitrate for drinking water in Iran is 50 mg/L, which in some parts of Iran it is greater than the allowable range. One way to remove nitrate is to use new Organic substances. These Organic materials must-have characteristics such as clean and environmentally friendly, availability, and cheapness. Therefore, in this study, to remove nitrate, two carbon substances, ethanol, and methanol, were used in batch experiments that met the above conditions. The tested conditions were performed on a case study basis, using Arable topsoil and soil with a depth of 7 meters, free of organic matter. Also, the environmental conditions of the experiment were STP conditions, the Temp was 25 Celsius and the PH was seven. The concentration of nitrate was high value 200 mg/L. Three different concentrations of ethanol and methanol, including ratios of Carbon to nitrogen of 5: 1, 5: 3, and 1.5: 1 were used and both organic materials were evaluated and compared. It was observed that a ratio of 5 to 1 of both solutions has a faster rate of nitrate removal and ethanol with a removal rate of 10 mg /L per day and has a greater ability to remove nitrate than methanol. It was also observed that ethanol can completely remove nitrates to zero value in 20 days, which indicates the reliability of this substance in high concentrations of soluble nitrate in water and soil medium. In addition, nitrate degradation was only observed in Arable topsoil and there was no nitrate declination by 7-meter soil and the reason was the lack of organic material and microbial acclimation.